

STATEMENT OF LEGAL AND FACTUAL BASIS

Magnox Pulaski, Inc.
Pulaski, Virginia
Permit No. VA-20322
February, 2000

Title V of the 1990 Clean Air Act Amendments required each state to develop a permit program to ensure that certain facilities have federal Air Pollution Operating Permits, called Title V Operating Permits. As required by 40 CFR Part 70 and 9 VAC 5 Chapter 80, Magnox Pulaski, Inc. has applied for a Title V Operating Permit for its magnetic iron oxide pigment manufacturing plant at 720 Commerce Street, Pulaski, VA. The Department has reviewed the application and has prepared a draft Title V Operating Permit.

Engineer/Permit Contact: _____

Date: _____

Air Permit Manager: _____

Date: _____

Assistant Division Director: _____

Date: _____

FACILITY INFORMATION

Permittee

Magnox Pulaski, Inc.
P.O. Drawer 431
Pulaski, VA 24301

Facility

Magnox Pulaski, Inc.
P.O. Drawer 431
(720 Commerce Street)
Pulaski, VA 24301

Registration No. 20322
AIRS ID No. 51-155-0011

SOURCE DESCRIPTION

SIC Code: 2816 - magnetic iron oxide pigments manufacturing.

This manufacturing plant produces magnetic iron oxide pigment powders for recording and printing applications. In simplified form, the process consists of (a) aqueous digesting of iron or steel and aqueous metal (such as cobalt) adsorption, all without air emissions, (b) iron oxide powder/dust drying, granulating and material handling, (c) high temperature gas phase oxidation-reduction reactions of iron oxide dust/powder in a group of 22 small batch kilns/calciners, (d) additional high temperature reduction of a portion of the material in a continuous reduction kiln/calciner, (e) annealing with minimal emissions after fabric filtering, and (f) powder/dust mulling, miscellaneous processing, material handling and storage, and bagging.

The high temperature reduction reactions in the kilns/calciners include the use of carbon monoxide (CO) to help be the reducing gas atmosphere and results in CO emissions exceeding 100 tons/yr due to venting the unreacted portion of the gas. This quantity of CO emission is the reason for this plant needing a Title V operating permit, even though annual permit fees are not applied to CO emissions. The process emission, other than from kilns/calciners, is particulate matter (dust/powder) from a multitude of processing points inside buildings, including several dryers, and is all well controlled by several baghouse/ fabric filter dust collectors and a few scrubbers. There are also 3 boilers totaling 69.1 million Btu/hr input capacity fired with natural gas and standby No. 2 fuel oil. Additional plant fuel burning is natural gas, but each additional unit is plenty small enough to be exempt from regulations (below 10 million Btu/hr).

The facility is a Title V major source for CO (485 tons/yr PTE) and particulate matter from the manufacturing process, plus SO₂ (154 tons/yr PTE) from the group of three boilers in the unlikely event that the backup No. 2 fuel oil is burned at 100% annual capacity factor and at the fuel's maximum 0.5% sulfur content. Particulate matter PTE exceeds 100 tons/yr only if the current dust collectors are removed that are required by this title V permit as the only permit requiring part of the dust collectors.

This source is located in an attainment area for all pollutants, and is a PSD definition major source due to CO PTE exceeding 250 tons/yr. Parts of the facility are permitted under Minor NSR Permits issued on June 26, 1992, June 18, 1993, May 6, 1998, and May 7, 1998. The rest of the facility was an existing source on March 17, 1972. The two May 1998 permits supersede 1991 and 1993 permits to construct or modify and operate. NSPS, MACT and NESHAPS are not applicable.

COMPLIANCE STATUS

The facility is inspected at least once per year. The facility is in compliance with the State Air Pollution Control Board Regulations.

EMISSION UNIT AND CONTROL DEVICE IDENTIFICATION

The emissions units are grouped as follows:

- | | | |
|--------|--|---|
| EU-C | Emission Units-Combustion | (All 3 natural gas/backup No. 2 fuel oil boilers over 10 million Btu/hr capacity). |
| EU-K | Emission Units-Kilns/calciners | (all 22 production batch calciners). |
| EU-CRK | Emission Unit-Continuous Reduction Kiln/calciner | (#244) |
| EU-D | Emission Units-Dryers | (combined total of all dust emitting non-kiln/calciner dust processing sources, including many dryers, annealers, mullers, miscellaneous powder processing, material handling, storage, and bagging). |

Following are additional details on the emissions units and control devices:

Emission Unit ID	Stack ID	Emission Unit Description	Size/Rated Capacity	Pollution Control Device Description (PCD)	PCD ID	Pollutant Controlled	Applicable Permit Date
<i>EU-C; Fuel Burning Equipment</i>							
EU-C	6S, 10S, 15S	Combustion units, 3 boilers combined , each burning natural gas with No. 2 fuel oil backup: EU-C-6, 32.00 MM, No. 3 Murray boiler, EU-C-10, 21.76 MM, No. 2 Com B boiler, EU-C-15, 15.36 MM, No.1 Springfield HS boiler.	69.1 million Btu/hr input rated capacity, 3 boilers combined.	None	NA	NA	None - each boiler was installed beefier.
<i>Process EU-K; Kilns/Calciners</i>							
EU-K	several	K3-K24 = 22 batch Kilns/calciners	22 batch 0.1 tph each, 17,280 tpy combined	several baghouses	several	PM	May 7, 1998

Emission Unit ID	Stack ID	Emission Unit Description	Size/Rated Capacity	Pollution Control Device Description (PCD)	PCD ID	Pollutant Controlled	Applicable Permit Date
<i>Process EU-CRK; Continuous Reduction Kiln/calcliner</i>							
EU-CRK	244S	#244 Continuous Reduction Kiln/calcliner	#244 continuous reducer 0.33 tph, 2891 tpy.	baghouse	DCM-31	PM	May 6, 1998
<i>Process EU-D; Dryers, material handling, etc. all dust emitting processes other than kilns/calcliners.</i>							
EU-D	many	Combined total of all dust emitting processes other than kilns/calcliners, including several rotary and several belt Dryers , annealers, mullers, blenders, miscellaneous processing and material handling and storage, baggers, etc.	NA	many baghouses and a few scrubbers.	-	PM	May 7, 1998, June 18, 1993, June 26, 1992

EMISSIONS INVENTORY

Emissions are summarized in the following tables.

1997 Actual Emissions from Title V permit application.

	Criteria Pollutant Emission in Tons/Year				
Emission Unit	VOC	CO	SO ₂	PM-10	NO _x
EU-C, Combustion, boilers 1-3.	0.6	8.8	1.6	0.9	11.2
EU-K, 22 batch kilns/ calciners.	-	255.6	-	1.2	-
EU-CRK, Continuous Reduction Kiln/Calciner, #244.	-	17.8	-	0.1	-
EU-D, Dryers, etc. dust processing.	-	-	-	4.7	-
Total	0.6	282.2	1.6	6.9	11.2

1997 Facility Hazardous Air Pollutant (HAPS) Emissions from Title V permit application.

Pollutant	Hazardous Air Pollutant Emission in Tons/Year
Cobalt	Much less than 1 ton/yr

EMISSION UNIT APPLICABLE REQUIREMENTS - EU-C: Emission Unit - Combustion boilers; 3 pre-1972 boilers combined; total 69.1 million Btu/hr input capacity, each fired with pipeline natural gas with No. 2 fuel oil backup. Boiler #1 Springfield 15.36 MM, plus boiler #2 Com B 21.76 MM, plus boiler #3 Murray 32.0 MM input capacity totals 69.1 MM combined. NSPS, MACT, NESHAP and new/modified source permitting do not apply. For simplification into a single group of boilers, the most stringent limitations within the group are applied to the whole group.

Limitations:

1. Particulate emissions and SO₂ emissions from these boilers shall be controlled by limiting the fuels to natural gas and No. 2 fuel oil. This condition formalizes the registration/ current fuel burning capabilities as a title V permit limitation. (9 VAC 5-80-110)
 2. The approved fuels for these boilers are natural gas and distillate oil. Distillate oil is defined as fuel oil that meets the specifications for fuel oil numbers 1 or 2 under the American Society for Testing and Materials, ASTM D396-78 "Standard Specification for Fuel Oils". A change in the fuels may require a permit to modify and operate. This condition formalizes the registration/ current fuel burning capabilities as a title V permit limitation. (9 VAC 5-80-110)
 3. Emissions from the operation of these boilers shall not exceed the limits specified below:

Total Suspended Particulate	0.36* lbs/million Btu input
PM-10	0.36* lbs/million Btu input
Sulfur Dioxide	2.64* lbs/million Btu input hourly emission limit
- * Particulate and SO₂ emission limits are effectively much cleaner than these values due to another condition for these boilers limiting the fuel to natural gas and No. 2 fuel oil. The No. 2 fuel oil national definition limits maximum sulfur content to 0.5 wt%, which calculates to only approximately 0.02 lb particulate/million Btu and approximately 0.52 lb SO₂/million Btu when using AP-42 emission factors. (9 VAC 5-80-110, 9 VAC 5-40-900 A. 1 b. at 69.1 million Btu/hr rated input capacity, and 5-40-930 A. 1. for AQCR 2)
4. Visible emissions from each of these boilers shall not exceed 20 percent opacity except during one six-minute period in any one hour in which visible emissions shall not exceed 60 percent opacity. (9 VAC 5-80-110, 9 VAC 5-40-940 (existing source))
 5. Boiler emissions shall be controlled by proper operation and maintenance. Boiler operators shall be trained in the proper operation of all such equipment. Training shall consist of a review and familiarization of the manufacturer's operating instructions, at minimum. (9 VAC 5-80-110)

Monitoring and Recordkeeping:

The permit includes requirements for maintaining records of all monitoring and testing required by the permit. These records include:

1. Visible emissions periodic monitoring is required per the title V "Facility Wide" "Monitoring" condition. This requires a weekly observation to check for any visible emissions using 40 CFR 60 Appendix A Method 22 techniques. If any visible emission is observed, the condition shall be corrected and recorded, or a 40 CFR 60 Appendix A Method 9 visible emission evaluation performed to check opacity compliance. Refr. 9 VAC 5-80-110 E. This is considered to be adequate monitoring for visible emissions from the boilers since they normally have no visible emissions with these fuels.
2. Distillate fuel oil (#2 F.O.): Vendor statement (certification is optional but not needed because boiler NSPS does not apply) covering each shipment that the fuel complies with ASTM specifications for No. 1 or 2 fuel oil, lists the sulfur content, the amount of oil and the date of shipment, and the name of the supplier.
3. Weekly log identifying the type of fuel(s) burned in the boilers and sulfur content of fuel oil burned.
4. The particulate and sulfur dioxide emission limits are met by meeting the permit limitations on the fuel types.
5. Records of operator training.

Testing: The permit does not require source tests for this process . The Department and EPA have authority to require testing not included in this permit if necessary to determine compliance with an emission limit or standard.

Reporting: Title V semi-annual reports of the results of monitoring and recordkeeping for each first and second half calendar year are required to be submitted to DEQ by each March 1 and September 1 respectively.

EMISSION UNIT APPLICABLE REQUIREMENTS - for refr. EU-K: Emission Units - Kilns/calciners, K3 - K24 group of all 22 production batch kilns/calciners; group rated capacity is 2.2 tons/hr (22 calciners x 0.1 tph each); 17,280 tons/yr permit throughput limit of calcined iron oxide; all controlled by baghouse/fabric filter dust collectors; emissions are primarily CO plus some particulates; not NSPS, MACT or NESHAPS; K1 - K20 were installed before 1972 (K1 and K2 have become title V insignificant R & D units), K21 - K 24 were installed since 1972; part have May 7, 1998 new source review (nsr) permit which superseded the July 11/22, 1991 nsr permit to construct and operate (covers new K21-24 and old K5 and 6 on the same bagouse). For simplification into a single group of equipment, the most stringent limitations within the group are extended to the whole group.

Limitations:

1. Particulate matter emissions from this K3 - K24 group of kilns/calciners shall be controlled by fabric filters or equivalent. The control devices shall be provided with adequate access for inspection. This baghouse control requirement rolls over the nsr permit requirements for K5, 6, 21-24, and extends and formalizes the current plant operation of baghouse dust controls for all the other kilns/calciners in this group to the most stringent requirement in the group for streamlining.
(9 VAC 5-80-110, 5-7-98 nsrpc 4 & 5, 9 VAC 5-50-260, 9 VAC 5-30-60)

2. The annual production of calcined iron oxide from the overall facility, which means the annual production from this K3 - K24 group of kilns/calciners, shall not exceed 17,280 tons/yr, calculated monthly as the sum of each consecutive 12 month period. This is rolled over from the nsr permit, and is about 90% annual capacity factor for the 2.2 tons/hr rated capacity.
(9 VAC 5-80-110, 5-7-98 nsrpc 8, 6-26-92 nsrpc 6, 9 VAC 5-170-160)

3. The monthly production of calcined iron oxide from the overall facility, which means the annual production from this K3 - K24 group of kilns/calciners, shall not exceed 1,637 tons/mo of calcined iron oxide. This is the 2.2 tons/hr rated capacity x 24 hrs/day x 31 days/month. Required by EPA policy for short term limit for practical enforceability. (9 VAC 5-80-110)

4. Visible emissions from this K3 - K24 group of kilns/calciners shall not exceed 5 percent opacity except during one six-minute period in any one hour in which visible emissions shall not exceed 30 percent opacity. This is the nsr permit limit for K5, 6, 21-24, and extends and formalizes current plant experience for all the other calciners in this group to streamline requirements to the most stringent in this group. Visible emissions from this equipment is normally zero.
(9 VAC 5-80-110, 9 VAC 5-50-260, 5-7-98 nsrpc 13)

5. Emissions from the operation of this K3 - K24 group of kilns/calciners shall not exceed the limits specified below:

Total Suspended Particulate	0.081 lbs/hr	0.354 tons/yr
PM-10	0.081 lbs/hr	0.354 tons/yr
Carbon Monoxide	102.3 lbs/hr	448.0 tons/yr

For streamlining, all these emission rates are the 5-7-98 nsr permit rates for 6 calciners combined, which are the most stringent allowables, increased proportionally to all 22 production

batch calciners combined (nsr emission limits times 22/6, since all these calciners are the same capacity). In all cases, the yearly limits are the hourly limits for 8760 hrs/yr = 100% annual capacity factor. This streamlining is reasonable in this case because for all 22 combined, the particulate emissions are practically nothing at 0.081 lbs/hr-0.354 tons/yr, and CO at 102.3 lbs/hr-448 tons/yr is not of high regulatory concern.

(9 VAC 5-80-110, proportional to 5-7-98 nsrpc 11 limits based on 9 VAC 5-50-260 (and 9 VAC 3-30-60 for PM))

6. Maintenance/operating procedures and recordkeeping for the air pollution control equipment are required. (9 VAC 5-80-110)

Monitoring and Recordkeeping:

The permit includes requirements for maintaining records of all monitoring and testing required by the permit. These records include:

1. Visible emissions periodic monitoring is required per the title V "Facility Wide" "Monitoring" condition. This requires a weekly observation to check for any visible emissions using 40CFR 60 Appendix A Method 22 techniques. If any visible emission is observed, the condition shall be corrected and recorded, or a 40 CFR 60 Appendix A Method 9 visible emission evaluation performed to check opacity compliance. Refr. 9 VAC 5-80-110 E. This is considered to be adequate monitoring for visible emissions from these calciners since the visible emissions from their fabric filters are usually zero.
2. Weekly records of baghouse pressure drop for these calciners.
3. Monthly records of monthly and yearly throughput for these calciners.
4. Title V periodic monitoring for TSP and PM-10 particulate emissions is satisfied by the periodic monitoring that assures good baghouse operation and that opacity requirements are met (normally zero opacity, limit 5% opacity, normally less than 1 ton/yr particulate emission for all 22 batch calciners combined), combined with the required monthly and yearly throughput recordkeeping to assure not exceeding the throughput limits, per EPA policy. Compliance has been verified by stack testing for particulate emission rate (40 CFR 60 Appendix A Method 5). The quantity of particulate emissions from this group of calciners is calculated monthly by:

Particulate emissions = (calcined product weight) x (0.001 loss) x (100% - 98.% efficient baghouses).

5. Title V periodic monitoring for CO emissions is satisfied by the required monthly and yearly throughput recordkeeping to assure not exceeding the throughput limits, per EPA policy, and CO emission calculations. Compliance has been verified by stack testing for CO emissions. The CO emission factor was obtained from stack testing this equipment/process at this plant. The quantity of CO

emissions are calculated monthly by:

CO emissions = (calcined product wt) x (46.5 lbs CO loss/ton calcined product from these calciners).

Testing: The permit does not require source tests for this process. The Department and EPA have authority to require testing not included in this permit if necessary to determine compliance with an emission limit or standard.

Reporting: Title V semi-annual reports of the results of monitoring and recordkeeping for each first and second half calendar year are required to be submitted to DEQ by each March 1 and September 1 respectively.

EMISSION UNIT APPLICABLE REQUIREMENTS - for refr. EU-CRK: Emission Unit - Continuous Reduction Kiln/calciner, kiln/calciner (refr. # 244); rated capacity is 0.33 tons/hr (660 lbs/hr) of ferric oxide (Fe_2O_3); controlled by add-on baghouse dust collector; emissions are primarily CO plus some particulates; not NSPS, MACT or NESHAPS; May 6, 1998 nsr permit superseded the 7-29-93 nsr permit to construct and operate.

Limitations:

1. Particulate matter emissions from the continuous reduction kiln/calciner (#244) shall be controlled by a baghouse having a minimum control efficiency of 99.0%. The control device shall be provided with adequate access for inspection. The baghouse efficiency passed a stack test. (9 VAC 5-80-110, 9 VAC 5-50-260, 5-6-98 nsrpc 3)
2. The annual production of ferric oxide (Fe_2O_3) by the continuous reduction kiln/calciner shall not exceed 2891 tons/yr, calculated monthly as the sum of each consecutive 12 month period. This is rolled over from the nsr permit, and is the 0.33 tons/hr rated capacity x 8760 hrs/yr = 100% annual capacity factor. (9 VAC 5-80-110, 9 VAC 5-170-160, 5-6-98 nsrpc 5)
3. The monthly production of ferric oxide (Fe_2O_3) by the continuous reduction kiln/calciner shall not exceed 246 tons/mo of ferric oxide (Fe_2O_3). This is the 0.33 tons/hr rated capacity x 24 hrs/day x 31 days/month. (9 VAC 5-80-110)
4. Visible emissions from the continuous reduction kiln/calciner shall not exceed 5 percent opacity except during one six-minute period in any one hour in which visible emissions shall not exceed 30 percent opacity. This is rolled over from nsr permit.

(9 VAC 5-80-110, 9 VAC 5-50-260, 5-6-98 nsrpc 9)

5. Emissions from the operation of the continuous reduction kiln/calcliner (refr # 244) shall not exceed the limits specified below:

Carbon Monoxide	8.45 lbs/hr	37.0 tons/yr
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The CO amounts are rolled over from the nsr permit. The amount of CO was determined from stack testing this process. The annual amount of CO is at the hourly rate for 8760 hrs/yr = 100% annual capacity factor. There are no permit limits for hourly and annual PM and PM-10 because the calculated maximum emissions are so small at less than one-half ton/yr. (9 VAC 5-80-110, 9 VAC 5-50-260, 5-6-98 nsrpc 8)

6. Maintenance/operating procedures and recordkeeping for the air pollution control equipment are required. (9 VAC 5-80-110)

Monitoring and Recordkeeping:

The permit includes requirements for maintaining records of all monitoring and testing required by the permit. These records include:

1. Visible emissions periodic monitoring is required per the title V "Facility Wide" "Monitoring" condition. This requires a weekly observation to check for any visible emissions using 40CFR 60 Appendix A Method 22 techniques. If any visible emission is observed, the condition shall be corrected and recorded, or a 40 CFR 60 Appendix A Method 9 visible emission evaluation performed to check opacity compliance. This is considered to be adequate monitoring for visible emissions from this calciner since the visible emissions from its fabric filter is usually zero. Refr. 9 VAC 5-80-110 E.
2. Weekly records of baghouse pressure drop for this calciner.
3. Monthly records of monthly and yearly throughput for this calciner
4. Title V periodic monitoring for baghouse control efficiency for particulate emissions is satisfied by the periodic monitoring that assures good baghouse operation and that opacity requirements are met (normally zero opacity, limit 5% opacity, normally less than 1 ton/yr particulate emission). Compliance has been verified by stack testing for baghouse efficiency for particulate emissions (40 CFR 60 Appendix A Method 5).
5. Title V periodic monitoring for CO emissions is satisfied by the required monthly and yearly throughput recordkeeping to assure not exceeding the throughput limits, per EPA policy, and calculating

CO emissions. Compliance has been verified by stack testing for CO emissions. The CO emission factor was obtained from stack testing this equipment/process. The quantity of CO emissions are calculated monthly by:

CO emissions = (process weight) x (32.2 lbs CO loss/ton ferric oxide (Fe_2O_3) calcined in this calciner).

Testing: The permit does not require source tests for this process. The Department and EPA have authority to require testing not included in this permit if necessary to determine compliance with an emission limit or standard.

Reporting: Title V semi-annual reports of the results of monitoring and recordkeeping for each first and second half calendar year are required to be submitted to DEQ by each March 1 and September 1 respectively.

EMISSION UNIT APPLICABLE REQUIREMENTS - for refr. EU-D: Emission Unit - Dryers, grouping of all of the multitude of non-kiln/calciner dust emission sources with emissions exhausted to atmosphere (not exhausted inside employee occupied buildings), includes several rotary and several belt **Dryers**, annealers, mullers, blenders, miscellaneous processes, material handling and storage, baggers, etc. All dust emission sources are controlled by baghouse/fabric filter dust collectors, except for a few scrubbers; emissions are particulates (dust); not NSPS, MACT or NESHAPS; most of the equipment was installed before 1972 but some was installed after 1972. Part of the equipment is covered by nsr permits to construct and operate dated May 7, 1998 (which superseded the July 11/22, 1991 permit), June 18, 1993, and June 26, 1992. For simplification into a single group of equipment, the most stringent limitations within the group are extended to apply to the whole group, except for the individualized multi-purpose dryer DR-8 (refr. # 247). The requirement for baghouse control rolls over nsr permit requirements for some equipment, and formalizes the current plant operation of baghouse dust controls for the rest of this group, the multitude of non-kiln/calciner dust emitting equipment.

Limitations:

1. Particulate matter emissions from the non-kiln/calciner dust processing equipment that has dust emissions, including several dryers, shall be controlled by fabric filters or equivalent, such as certain scrubbers. The control devices shall be provided with adequate access for inspection.
(9 VAC 5-80-110, 9 VAC 5-50-260, 5-7-98 nsrpc 3, 6-18-93 nsrpc 3, 6-26-92 nsrpc 3)
2. The approved fuel for any of the non-kiln/calciner dust processing equipment that burns fuel, such as annealers and part of the dryers, is natural gas. A change in the fuel may require a permit to modify and operate. Capacities of each is well under 10 million Btu/hr.

(9 VAC 5-80-110, 9 VAC 5-170-160, 5-7-98 nsrpc 6, 6-26-92 nsrpc 4)

3. The annual production of calcined iron oxide from the overall facility shall not exceed 17,280 tons/yr, calculated monthly as the sum of each consecutive 12 month period.

(9 VAC 5-80-110, 6-26-92 nsrpc 6, 9 VAC 5-170-160)

4. The monthly production of calcined iron oxide from the overall facility shall not exceed 1,637 tons/month of calcined iron oxide. (9 VAC 5-80-110)

5. The annual throughput of the multi-purpose dryer, DR-8 (refr. #247), shall not exceed 4380 tons/yr, calculated monthly as the sum of each consecutive 12 month period.

(9 VAC 5-80-110, 9 VAC 5-170-160, 6-18-93 nsrpc 4)

6. The monthly throughput of the multi-purpose dryer, DR-8 (refr. #247) shall not exceed 372 tons/mo, calculated monthly as the sum of each consecutive 12 month period. (9 VAC 5-80-110)

7. The cobalt adsorption process shall consume no more than 76 pounds of cobalt per ton of finished product. (9 VAC 5-80-110, 9 VAC 5-170-160, 6-26-92 nsrpc 7)

8. The control efficiency of the baghouse controlling particulate and cobalt emissions from the multi-purpose dryer, DR-8 (refr. #247), shall be at least 99%.

(9 VAC 5-80-110, 9 VAC 5-50-260, 6-18-93 nsrpc 3)

9. Visible emissions from the non-kiln/calciner dust processing equipment, shall not exceed 5 percent opacity except during one six-minute period in any one hour in which visible emissions shall not exceed 30 percent opacity.

(9 VAC 5-80-110, 9 VAC 5-50-260, 5-7-98 nsrpc 12, 6-18-93 nsrpc 5, 6-26-92 nsrpc 10)

10. Maintenance/Operating Procedures for the dust emission control equipment controlling the non-kiln/calciner dust processing equipment: The permittee shall take the following measures in order to minimize the duration and frequency of excess emissions, with respect to air pollution control equipment controlling the non-kiln/calciner dust processing equipment:

- a. Develop a maintenance schedule and maintain records of all scheduled and non-scheduled maintenance.
- b. Maintain an inventory of spare parts.
- c. Have available written operating procedures. These procedures shall be based on the

manufacturer's recommendations, at a minimum, and shall list the range of pressure drop across each fabric filter and the range of liquid flow for each scrubber consistent with proper control device operation.

- d. Train operators in the proper operation of all such equipment and familiarize the operators with the written operating procedures. The permittee shall maintain records of the training provided including the names of trainees, the date of training and the nature of the training.

Records of maintenance and training shall be maintained on site for a period of five years and shall be made available to DEQ personnel upon request.

(9 VAC 5-80-110, 9 VAC 5-50-260, 9 VAC 5-50-20 E)

Monitoring and Recordkeeping:

The permit includes requirements for maintaining records of all monitoring and testing required by the permit. These records include:

1. Visible emissions periodic monitoring is required per the title V "Facility Wide" "Monitoring" condition. This requires a weekly observation to check for any visible emissions using 40CFR 60 Appendix A Method 22 techniques. If any visible emission is observed, the condition shall be corrected and recorded, or a 40 CFR 60 Appendix A Method 9 visible emission evaluation performed to check opacity compliance. This is considered to be adequate monitoring for visible emissions from this equipment group since the visible emissions from the fabric filters and scrubbers are usually zero. Refr. 9 VAC 5-80-110 E.
2. Weekly log of visible emission monitoring.
2. Weekly records of baghouse pressure drop and scrubber liquid flow for the particulate controls.
3. Monthly records of monthly and yearly production of calcined iron oxide from the overall plant, and individual throughput for the multi-purpose dryer DR-8 (refr. #247).
4. Monthly records of monthly and yearly pounds of cobalt consumption per ton of finished product.
5. Records of scheduled and non-scheduled maintenance for the dust emission control equipment controlling the non-kiln/calciner dust processing equipment.
6. Title V periodic monitoring for the multi-purpose dryer DR-8 (#247) baghouse control efficiency is

satisfied by the periodic monitoring that assures good baghouse operation and that opacity requirements are met (normally zero opacity, limit 5% opacity, normally less than 1 ton/yr particulate emission). Compliance has been verified by stack testing for baghouse efficiency for particulate emissions (40 CFR 60 Appendix A Method 5).

Testing: The permit does not require source tests for this process. The Department and EPA have authority to require testing not included in this permit if necessary to determine compliance with an emission limit or standard.

Reporting: Title V semi-annual reports of the results of monitoring and recordkeeping for each first and second half calendar year are required to be submitted to DEQ by each March 1 and September 1 respectively.

STREAMLINED REQUIREMENTS

Streamlining 1: EU-C: Emission Unit - Combustion boilers. All three boilers are streamlined into a single group because all have the same requirements. All are fired only with natural gas with standby No. 2 fuel oil. All have approximate input rated capacities of only 15 to 32 million Btu/hr, totaling 69.1 million Btu/hr. All are pre-1972 without nsr permits, so there are no applicable requirements from nsr permitting, new or modified source regulations, or NSPS, MACT or NESHAPS. Only existing source regulations apply (particulate and sulfur dioxide emission rates per million Btu, and opacity as in this draft title V permit).

Streamlining 2: EU-K: Emission Units - Kilns/calciners. All 22 production batch kilns/calciners, K3-K24, are grouped for simplification into a single group of equipment. The most stringent limitations within the group are applied to the whole group. The May 7, 1998 permit requirements and the requirements for the K1-K20 pre-1972 units are streamlined by using the most stringent requirements and increasing emission rate limitations proportionally to the full group from the stringent May 7, 1998 permit for new units K21-K24 and existing K5 and K6 (exhausts combined to a single baghouse). NSPS, MACT and NESHAPS do not apply. K1 and K2 have become insignificant R & D units. The streamlined more stringent requirements due to the May 7, 1998 permit and as currently practiced by the whole group are:

2a. 2.2 tons/hr capacity as a group (22 x 0.1), because all 22 units are similar small calciners having the same 0.1 ton/hr throughput rated capacity. This replaces the nsr permit capacity for its part of the group, and is the current practice/registration for the remainder of the group.

2b. All particulate emissions from the group shall be controlled by baghouses/fabric filters. This

replaces the nsr permit limitation for its part of the group, and is the current practice/registration for the remainder of the group.

2c. Visible emissions shall not exceed 5% opacity, except during one six-minute period in any one hour not to exceed 30% opacity, is extended from the nsr part of the group to the entire group. This streamlines out the 20% opacity limit for the non-nsr permitted part of the group, whether pre or post 1972 opacity regulation (9 VAC 5-40-80/9 VAC 5-50-80).

2d. Carbon monoxide (CO) emissions from the group shall not exceed 102.3 lbs/hr and 448.0 tons/yr. These emission rates are the 5-7-98 nsr permit rates for 6 calciners combined (27.9 lb/hr, 122.2 tons/yr) extended to the group by increasing proportionally to all 22 production batch calciners combined (nsr emission limits times 22/6, since all these calciners are the same capacity). The yearly limit is the hourly limit for 8760 hrs/yr = 100% annual capacity factor. Previously, there was no limit on the non-permitted calciners. This replaces the nsr permit limit for its part of the group, and is the current practice for the remainder of the group.

2e. Particulate emissions TSP and PM-10 from the group shall not exceed 0.081 lbs/hr and 0.354 tons/yr. These emission rates are the 5-7-98 nsr permit rates for 6 calciners combined (0.022 lb/hr, 0.0965 tons/yr) extended to the group by increasing proportionally to all 22 production batch calciners combined (nsr emission limits times 22/6, since all these calciners are the same capacity). The yearly limit is the hourly limit for 8760 hrs/yr = 100% annual capacity factor. This replaces the nsr permit limit for its part of the group and the more liberal 9 VAC 5-40-260 formula for the existing units, and is the current practice for the entire group.

Streamlining 3: EU-CRK: Emission Unit - Continuous Reduction Kiln.

Visible emissions shall not exceed 5% opacity, except during one six-minute period in any one hour not to exceed 30% opacity. This limitation from the nsr permit streamlines out the 20% opacity limit for the new source opacity regulation, 9 VAC 5-50-80.

Streamlining 4: EU-D: Emission Unit - Dryers. Streamline into a single group all of the multitude of non-kiln/calciner dust emission sources with emissions exhausted to atmosphere (not exhausted inside employee occupied buildings). The group includes several rotary and several belt **Dryers**, annealers, mullers, blenders, miscellaneous processes, material handling and storage, baggers, etc.

The group of all these many dust emission sources are controlled by many baghouse/fabric filter dust collectors, except for a few scrubbers. Emissions are particulates (dust), and typically are a combined total of only approximately 5 tons/yr, calculated at baghouse/fabric filter control efficiencies of 98% to 99%.

NSPS, MACT and NESHAPS do not apply. Most of the equipment was installed before 1972 and is

not covered by any nsr permit. Part of the equipment was installed after 1972 and is covered by nsr permits to construct and operate dated May 7, 1998 (which superseded the July 11/22, 1991 permit), June 18, 1993, and June 26, 1992. The applicable requirements from all these permits and the regulations for the non-permitted sources are streamlined into the draft title V permit for the overall group, except for retaining in the draft title V permit the additional individuallized nsr permit

requirements for the multi-purpose dryer DR-8 (refr. # 247). For simplification into a single group of equipment, the most stringent limitations within the group are extended to apply to the whole group, except for the additional individuallized requirements for the multi-purpose dryer DR-8 (refr. # 247). The steamlined most stringent requirements are:

- 4a. Particulate emissions from the entire group shall be controlled by baghouses/fabric filters. This replaces the nsr permits limitations for their parts of the group, and is the current practice/registration for the remainder of the group. The requirement applies to all dust emission sources in this group that exhaust to atmosphere (not exhaust inside employee occupied buildings).
- 4b. Visible emissions shall not exceed 5% opacity, except during one six-minute period in any one hour not to exceed 30% opacity. This limitation is extended from the nsr permits parts of the group to the entire group. This includes streamlining out the 20% opacity limit for the pre-1972 non-nsr permitted parts of the group, whether pre or post 1972 opacity regulation (9 VAC 5-40-80/9 VAC 5-50-80).
- 4c. The approved fuel for any of the non-kiln/calcliner dust processing equipment that burns fuel, such as annealers and part of the dryers, is only natural gas, from nsr permits.
- 4d. The annual production of calcined iron oxide from the overall facility shall not exceed 17,280 tons/yr, calculated monthly as the sum of each consecutive 12 month period, from nsr permit.
- 4e. The cobalt adsorption process shall consume no more than 76 pounds of cobalt per ton of finished product, from the 6-26-92 nsr permit. This requirement, combined with the baghouse or equivalent dust control requirement, assures that cobalt emissions will be only a small fraction of a ton per year and of no further concern. Cobalt in a liquid is adsorbed onto iron oxide particles, dried, and diffused into the particles by hot annealing. Cobalt is emitted as part of the iron oxide dust particles, especially from drying, unless process dust is baghouse controlled and throughput quantities are limited.
- 4f. Have maintenance/operating procedures for this group's dust emission control equipment. This shall include a maintenance schedule and maintenance records, written operating procedures and operator training, from 5-6-98 nsr permit.
- 4g. Particulate emission allowables from 9 VAC 5-40-260 for existing sources and the similar 9 VAC

5-50-10 D for new or modified sources are streamlined out because they indicate a ridiculously high allowable compared with actual emissions when considering the required baghouse dust controls and the very modest dust sources. Even if uncontrolled, dust emissions would be a small lbs/hr and tons/yr, and less than these referenced regulations would allow. But the plant's neighbors cannot stand even this amount because the emissions are pigments with negative impact exceeding their weight as particulate, and there are residential neighbors located up on a hill close beside the plant where modeling predicts impacts exceeding the particulate NAAQS at any significant allowable emission rate such as these referenced regulations would allow. The baghouse maintenance requirements, visible emission periodic monitoring requirements, normally zero opacity, and small nature of these sources also help to allow streamlining out the ridiculously high allowables from these referenced regulations.

Streamlining 5: The conditions in the nsr permits are streamlined out which deal with new equipment installation time frames and initial notifications and visible emissions evaluations because these conditions are obsolete due to having been completed for all permitted equipment.

GENERAL CONDITIONS

The permit contains general conditions required by 40 CFR Part 70 and 9 VAC 5-80-110, that apply to all Federal operating permit sources. These include requirements for submitting semi-annual monitoring reports and an annual compliance certification report. The permit also requires notification of deviations from permit requirements or any excess emissions, including those caused by upsets, within four daytime business hours.

STATE ONLY APPLICABLE REQUIREMENTS

The following Virginia Administrative Codes have specific requirements only enforceable by the State and have been identified as applicable by the applicant:

NA.

FUTURE APPLICABLE REQUIREMENTS

NA.

INAPPLICABLE REQUIREMENTS

NA.

COMPLIANCE PLAN

NA because this facility is considered to be in compliance.

INSIGNIFICANT EMISSION UNITS

The insignificant emission units are presumed to be in compliance with all requirements of the Clean Air Act as may apply. Based on this presumption, no monitoring, recordkeeping or reporting shall be required for these emission units in accordance with 9 VAC 5-80-110.

The following emission units at the facility are identified in the application as insignificant emission units under 9 VAC 5-80-720:

Emission Unit No.	Emission Unit Description	Citation	Pollutant(s) Emitted (5-80-720 B)	Rated Capacity (5-80-720 C)
N/A	Ferrous Sulfate Dissolving Tank		yes, PM	
N/A	Copperas Sludge Recovery Tanks (2)		yes	
N/A	NTR - Lab Hood		yes, PM	
N/A	Starter Storage Tanks (3)		yes	
N/A	Conversion - A&B Floc Tanks		yes	
N/A	#4 Conversion Storage Tank		yes	
N/A	Cobalt Zinc Mix Tanks (2)		yes, Cobalt, Zinc, PM	
N/A	Iron Oxide Storage Tanks (40)		yes, PM	
N/A	CA Plant - 5A Copperas Head Tank		yes	
N/A	CA Plant - 10a Waste Caustic Storage Tank		yes	
N/A	CA Plant - TK7 Cobalt Mix Tank		yes, Cobalt	
N/A	CA Plant - TK13 Reslurry Tank		yes	
N/A	CA Plant - #14 Reagent Mix Tank		yes	
N/A	CA Plant - 14a Cobalt Mix Tank		yes, Cobalt	
N/A	CA Plant - Filtration Tank		yes	

Emission Unit No.	Emission Unit Description	Citation	Pollutant(s) Emitted (5-80-720 B)	Rated Capacity (5-80-720 C)
N/A	CA Plant - Product Storage Hoppers		yes, PM	
N/A	CA Plant - Conversion Tank		yes	
N/A	CA Plant - Blender		yes	
N/A	CA Plant - Reuse Caustic 5% Storage Tank		yes	
N/A	CA Plant - 50% Caustic Storage Tank		yes	
N/A	25,000 gallon fuel oil tank		yes	
N/A	Pilot Plant - TK 30		yes	
N/A	Pilot Plant - Misc. Storage Tanks (9)		yes	
N/A	Pilot Plant - Filter Presses (6)		yes, PM	
N/A	Rotary Dryer Area - Rotary Filters (3)		yes, PM	
N/A	Manufacturing - Filter Presses (2)		yes, PM	
N/A	Packaging		yes, PM	
N/A	R & D - #1 Kiln Hood Exhaust		yes, PM	
N/A	R & D - #1 Kiln Exhaust		yes, PM	
N/A	R & D - #2 Kiln Hood Exhaust		yes, PM	
N/A	R & D - #2 Kiln Exhaust		yes, CO, PM	
N/A	R & D - Fluid Bed Kiln Exhaust		yes, PM	
N/A	R & D - Flexible Fume Hood - oven room		yes, PM	
N/A	R & D - High Temp. Oven/Kiln Room		yes, CO, PM	
2	W. T. Lime Storage Tank Dust Collector		yes	
3	Creek Water Pump House		yes	
4	Creek Water Pump House		yes	
5	Boiler House Natural Gas Heater			<10mmBTU
21	Nat. Gas Heater - Y.O. Shop			<10mmBTU

Emission Unit No.	Emission Unit Description	Citation	Pollutant(s) Emitted (5-80-720 B)	Rated Capacity (5-80-720 C)
25	#38 Copperas Storage Tank Vent		yes	
26	#39 Caustic Storage Tank Vent		yes	
27	Nat. Gas Heater S.P.			<10mmBTU
28	Nat. Gas Heater S.P.			<10mmBTU
29	Nat. Gas Heater S.P.			<10mmBTU
33	S.P. Dryer Burner Exhaust			<10mmBTU
35	D Reactor Exhaust Stack		yes	
36	#45 Copperas Storage Tank Vent		yes	
37	E Reactor Exhaust Stack		yes	
40	#13 Copperas Storage Tank Vent		yes	
41	#12 Copperas Storage Tank Vent		yes	
42	#11 Copperas Storage Tank Vent		yes	
43	#6 Copperas Cook Tank Stack		yes	
47	#8 Copperas Cook Tank		yes	
49	#1 Copperas Cook Tank		yes	
75	Rotary Dryer Deaerator Tank Vent		yes	
79	Black Dust Collector Stack		yes	
92	#6 Belt Dryer Heat Exchanger Stack		yes	
100	#30 Tank Ducon Scrubber Stack		yes	
102	#4 Proctor Dryer Exhaust Stack		yes	
104	#1 & #2 Proctor Dryer Exhaust Stack		yes	
106	#1-2-3 Nat. Gas Hot Water Heater Stack			<10mmBTU
107	#4-5-6 Nat. Gas Hot Water Heater Stack			<10mmBTU
113	Flammable Storage Cabinet Vent		yes	
120	Fume Hood Exhaust Conversion		yes	

Emission Unit No.	Emission Unit Description	Citation	Pollutant(s) Emitted (5-80-720 B)	Rated Capacity (5-80-720 C)
121	Exhaust Fan Fume Hood Kiln Room		yes	
122	#1 Dev. Kiln Hood Exhaust		yes	
123	#1 Dev. Kiln Exhaust		yes	
124	#2 Dev. Kiln Hood Exhaust		yes	
125	#2 Dev. Kiln Exhaust		yes	
126	Fluid Bed Kiln Exhaust		yes	
127	Flexible Fume Hood - Oven Room		yes	
128	High Temp. Oven Kiln Room - Dev.		yes	
141	Nat. Gas Heater - M.O. Shop			<10mmBTU
143	Nat. Gas Heater - Forklift Shop			<10mmBTU
145	Nat. Gas Hot Water Heater - M.O. Shop			<10mmBTU
150	Nat. Gas High Press. Hot Water Heater			<10mmBTU
151	#24 Kiln Hood Exhaust, Nat. Gas			<10mmBTU
153	#23 Kiln Hood Exhaust, Nat. Gas			<10mmBTU
156	#22 Kiln Hood Exhaust, Nat. Gas			<10mmBTU
158	#21 Kiln Hood Exhaust, Nat. Gas			<10mmBTU
163	Batch Kiln #1 - R & D		yes	
165	#4 Kiln Hood Exhaust, Nat. Gas			<10mmBTU
169	#3 Kiln Hood Exhaust, Nat. Gas			<10mmBTU
170	#6 Kiln Hood Exhaust, Nat. Gas			<10mmBTU
174	#5 Kiln Hood Exhaust, Nat. Gas			<10mmBTU
175	#8 Kiln Hood Exhaust, Nat. Gas			<10mmBTU
179	#7 Kiln Hood Exhaust, Nat. Gas			<10mmBTU
180	#16 Kiln Hood Exhaust, Nat. Gas			<10mmBTU

Emission Unit No.	Emission Unit Description	Citation	Pollutant(s) Emitted (5-80-720 B)	Rated Capacity (5-80-720 C)
184	#15 Kiln Hood Exhaust, Nat. Gas			<10mmBTU
185	#18 Kiln Hood Exhaust, Nat. Gas			<10mmBTU
188	#17 Kiln Hood Exhaust, Nat. Gas			<10mmBTU
189	#19 Kiln Hood Exhaust, Nat. Gas			<10mmBTU
192	#20 Kiln Hood Exhaust, Nat. Gas			<10mmBTU
193	#13 Kiln Hood Exhaust, Nat. Gas			<10mmBTU
197	#14 Kiln Hood Exhaust, Nat. Gas			<10mmBTU
198	#11 Kiln Hood Exhaust, Nat. Gas			<10mmBTU
202	#12 Kiln Hood Exhaust, Nat. Gas			<10mmBTU
203	#9 Kiln Hood Exhaust, Nat. Gas			<10mmBTU
207	#10 Kiln Hood Exhaust, Nat. Gas			<10mmBTU
214	Nat. Gas Hot Water Heaters Stack - 4 ea.			<10mmBTU
215	Air Inlet Control Rm. Hot Water Heater, Nat. Gas			<10mmBTU
216	Nat. Gas Hot Water Boiler			<10mmBTU
229	Nat. Gas Heater - M. O. Drum Storage			<10mmBTU
230	Nat. Gas Heater Air Intake - Blenders			<10mmBTU
232	Nat. Gas Heater - Warehouse			<10mmBTU
233	Nat. Gas Heater - Warehouse			<10mmBTU
242	High Temp. Kiln Burner Exhaust, Nat. Gas			2.4mm BTU
248	5% Caustic Exhaust W.T. Inside Pit		yes	
252	Nat. Gas Heater Y.O. Shop Storage Area			<10mmBTU
257	C.A. Plant - #14 Mix Tank		yes	
260	C.A. Plant - #8-A Storage Tank		yes	
262	50% Caustic Storage Tank - C.A. Plant		yes	

Emission Unit No.	Emission Unit Description	Citation	Pollutant(s) Emitted (5-80-720 B)	Rated Capacity (5-80-720 C)
264	Reuse Caustic 5% Storage Tank-C.A. Plant		yes	
266	High Temp. Kiln Burner Exhaust-Feed End, Nat. Gas			2.4mmBTU
269	High Temp. Kiln Burner Exhaust-Center, Nat. Gas			2.4mmBTU
31A	A Reactor Exhaust		yes	
32A	B Reactor Exhaust		yes	
34A	C Reactor Exhaust Stack		yes	
61A	#2 NTR Tank Stack		yes	
62A	#3 NTR Tank Stack		yes	
70A	#1 NTR Tank Stack		yes	
71A	#4 NTR Tank Stack		yes	
73A	#5 NTR Tank Stack		yes	
74A	#6 NTR Tank Stack		yes	
116A	#8 Conversion Tank Stack		yes	
258A	C.A. Plant - 36-B Process Tank		yes	
259A	C.A. Plant - #6-A Process Tank		yes	

CONFIDENTIAL INFORMATION

The permittee did not submit a request for confidentiality. All portions of the Title V application are suitable for public review.

PUBLIC PARTICIPATION

A public notice regarding the draft permit was published in the October 31, 1999 edition of the Roanoke Times. Public comments were accepted from October 31, 1999 through November 30, 1999. The only comments received were the letter of comments and e-mail from EPA Region III dated November 24, 1999. All the comments in the EPA letter and e-mail have been addressed by revising the draft permit and statement of basis to become the proposed permit and proposed statement of basis for EPA review.

EPA did not comment on the proposed permit and statement of basis.

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